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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/572,775

06/29/2006

Bogdan Vuletic

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EXAMINER

WILSON, DEMARIS R

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/572,775	<b>Applicant(s)</b> VULETIC, BOGDAN	
	<b>Examiner</b> DEMARIS R. WILSON	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 20 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/29/2007, 3/21/2006</u> .                                    | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group I, claims 1-11 and 20, in the reply filed on 4/01/2008 is acknowledged.

### ***Claim Objections***

Claim 1 objected to because of the following informalities: In claim 1 line 7, the recitation "granulation injecting water in a condensation space" is considered grammatically incorrect. It is considered that a conjunction or another term is appropriate between the words "granulation" and "injecting". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-11 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Claim 1 recites the limitation "the H<sub>2</sub>S-containing vapors" in line 6. There is insufficient antecedent basis for this limitation in the claim.

3. Claim 4 recites the limitation "the SO<sub>2</sub>" in line 3. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geropp et al. <US 4758260> in view of Schingnitz et al. <US 5550312> and Watson et al. <US 2002/0015675>. Geropp, regarding claims 1, 2 and 20, discloses a process and device for producing granulated slag sand from blast furnace slag having steps of (see column 3 lines 19-47 and 61-68)

- i. Feeding a granule/water mixture being formed during granulation to a granulation tank (6) and then to a dewatering installation (19), and dewatering the slag granules in the dewatering installation, along with
- ii. Condensing (9) H<sub>2</sub>S containing vapors and gases resulting from granulation and injecting water (see column 3 lines 35-47 and 61-68) in a condensation space (9) which is connected to the granulation tank, with the water injection being at a water injection point (i.e. nozzle), and

iii. Discharging  $\text{H}_2\text{S}$  containing residual gases from the condensation space below the water injection point (see column 5 lines 6-12 and figure 1).

6. Geropp is unfortunately silent to an express disclosure of burning  $\text{H}_2\text{S}$  from the condensation space containing the residual gases and vapors. Geropp does suggest that it would be desirable to separate the gaseous  $\text{H}_2\text{S}$  emissions (see column 4 lines 59-60 and column 5 lines 6-12), albeit a closed recirculation system. One of ordinary skill would appreciate the separations of such vapors from the slag mixture. Schingnitz teaches in a method of thermal utilization of waste materials that molten slag is produced in a reaction chamber (9) containing gases (i.e.  $\text{CO}$ ,  $\text{H}_2$ ,  $\text{CO}_2$ ,  $\text{NH}_3$  and  $\text{H}_2\text{S}$ ) that are cooled with water (see column 5 lines 49-65) to form granulates, with the water being freed of residual gases such as  $\text{NH}_3$ ,  $\text{HCl}$ , and  $\text{H}_2\text{S}$  (see column 6 lines 5-25) as it (i.e. the water in the form of steam) quenches these gases to a saturation temperature and solidifies the molten slag. Schingnitz continues (see column 6 lines 24-25) with  $\text{H}_2\text{S}$  fractions of the separated gas components being processed into sulfur for commercial reasons (i.e. to be sold). Schingnitz, however, is silent as to an explicit teaching of burning as the means of processing to produce this sulfur for commercial purposes. Nevertheless, Watson teaches (see abstract and paragraphs [0012]-[0013] and [0031], [0033], and [0034]) in a method of treatment for combustible gas streams that hydrogen sulfide (i.e.  $\text{H}_2\text{S}$ ) is fed to a burner in a furnace to form sulfur vapor, where  $\text{H}_2\text{S}$  is burned in the presence of  $\text{O}_2$  to produce  $\text{SO}_2$ .

7. It is considered that one of ordinary skill in the art would appreciate the commercial advantages of having sulfur being sold. Nevertheless, one of ordinary skill in the art would appreciate the teachings of Schingnitz for providing commercial relevance for the

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separation and further processing of sulfur. One of ordinary skill in the art would further appreciate the teachings Watson for providing a method of processing  $H_2S$  to produce sulfur. It is considered that it would have been obvious to one of ordinary skill in the art at the time of invention to have used the teachings of Watson for processing  $H_2S$  into sulfur and Schingnitz for the commercial desirability of processing  $H_2S$  into sulfur as applied to the disclosure of Geropp to have a burning of  $H_2S$  step to increase commercial viability of granulation of slag processing thereby utilizing bi-products of the slag processing for commercial gain.

8. Regarding claims 3, 4 and 10, it is considered that residual gases are discharged from condensation space in a direction opposite to the slag and cooled to be precipitated along with water injected to be fed into a water recycle line (see Geropp column 3 lines 35-60) (see also Geropp column 4 lines 59-68, 27-45 and figure 1).

9. Regarding claim 5, it is considered that the granulation tank is expected to be partitioned off in a gas tight manner from the dewatering instillation as both units are separate entities, along with the granulation tank being a closed chamber in a closed system with means for providing inflow and outflow of process materials.

10. Regarding claim 6, 8 and 11, with respect to 6 and 8, it is considered that one of ordinary skill can without undue experimentation extract empirical data and have a desirable "setting" for pressure, albeit super/subatmospheric pressure. Pressure in this instance is considered to be a result-effective variable, one of which is readily apparent to one of ordinary skill. In further respect to claim 8, subatmospheric pressure is considered to read as broadly as reasonably possible on reduced pressure (see Geropp column 3

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lines 43-52). With respect to claim 11, controlling the quantity of injected water as a function of slag rate is considered readily apparent to one of ordinary skill in the art as one of ordinary skill in the art can without undue experimentation extract empirical data to have an optimized ratio of quantity of injected water to slag rate to create a means of control and regulation. Quantity of injected water and slag rate and any corollary values/terms/ratios are considered result-effective variables, of which are readily apparent to those skilled in the art. Generally, absent persuasive evidence that these particular features/steps (i.e. setting of pressure and/or controlling injected water based upon slag rate) warrants unexpected results that have not been suggested by the prior art of record or been readily apparent to one skilled in the art, the setting of pressure and/or controlling injected water based upon slag rate will not support patentability of subject matter encompassed by the prior art and considered readily apparent to those skilled in the art unless there is evidence indicating criticality of such steps/features.

11. Regarding claim 9, it is considered that a sucking action is accomplished through the reduced-pressure valve (17) as the valve controls residual vapor and gas in the recycle line (14) that feeds to condenser (9) where there is water injection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEMARIS R. WILSON whose telephone number is (571)272-6377. The examiner can normally be reached on 9-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/  
Supervisory Patent Examiner, Art  
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/D. R. W./  
Examiner, Art Unit 1791  
6/13/2008